排除SD-WAN動態按需隧道故障

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簡介

本文檔介紹在配置或檢查與SD-WAN動態按需隧道相關問題時可以使用的故障排除命令。

必備條件

採用元件

本檔案是根據以下組態參考、軟體和硬體版本撰寫的:

- vManage 20.9.3版
- 邊緣路由器ISR4K版本17.9.3
- 所有裝置都配置為根據官方文檔建立動態按需隧道

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除(預設))的組態來啟動。如果您的網路運作中,請確保您瞭解任何指令可能造成的影響。



註:有關<u>動態按需隧道</u>配置,請參閱本文檔。

背景資訊

Cisco SD-WAN支援任意兩個Cisco SD-WAN分支裝置之間的動態按需隧道。僅當兩台裝置之間存 在流量最佳化頻寬使用和裝置效能時,才會觸發這些隧道的設定。

工作案例

使用的拓撲

Hub Site ID 100 System IP 10.10.10.100



在正常運行方案中,按需隧道觸發條件包括:

- 無法建立分支之間的BFD會話,在show sdwan bfd sessions中甚至顯示為關閉
- 在終端之間傳送相關流量時,可能會觸發BFD會話
- 必須設定和確認基本<u>動態按需隧道</u>配置

觸發程式隨選通道啟用

 最初,分支之間的BFD會話未啟動,只有從分支到集線器的會話處於啟動狀態,並且按需系統 狀態在分支和OMP表中都顯示為非活動狀態,從集線器的備份路由設定為C、I、R,而從 Spoke 2的路由設定為I、U、IA

<#root>

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT MULTIP
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

2 10.10.10.2 yes inactive -

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ... Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated

		PATH	ł		ATTRIBUT	E			
VPN	PREFIX	FROM PEER I) LABEL	STATUS	ТҮРЕ	TLOC IP	COLOR	ENCAP	PRE
10	10.2.2.2/32	192.168.0.1 61	. 1005	C,I,R	installed	10.10.10.100	blue	ipsec	-
		192.168.0.1 62	2 1003	I,U,IA	installed	10.10.10.2	default	ipsec	_
		192.168.0.1 64	l 1005	C,R	installed	10.10.10.100	blue	ipsec	-
		192.168.0.1 65	5 1003	I,U,IA	installed	10.10.10.2	private1	ipsec	-
		192.168.0.1 67	/ 1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
		192.168.0.1 68	3 1003	I,U,IA	installed	10.10.10.2	private2	ipsec	-
		192.168.0.2 71	L 1005	C,R	installed	10.10.10.100	blue	ipsec	-
		192.168.0.2 72	2 1003	U,IA	installed	10.10.10.2	default	ipsec	-
		192.168.0.2 74	1005	C,R	installed	10.10.10.100	blue	ipsec	-
		192.168.0.2 75	5 1003	U,IA	installed	10.10.10.2	private1	ipsec	-
		192.168.0.2 77	/ 1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
		192.168.0.2 78	3 1003	U,IA	installed	10.10.10.2	private2	ipsec	-
	VPN 10	VPN PREFIX	PATH VPN PREFIX FROM PEER II 10 10.2.2.2/32 192.168.0.1 61 192.168.0.1 62 192.168.0.1 63 192.168.0.1 63 192.168.0.1 63 192.168.0.1 63 192.168.0.2 73 192.168.0.2 74 192.168.0.2 75 192.168.0.2 75	VPN PREFIX FROM PEER ID LABEL 10 10.2.2.2/32 192.168.0.1 61 1005 192.168.0.1 62 1003 192.168.0.1 64 1005 192.168.0.1 64 1005 192.168.0.1 65 1003 192.168.0.1 65 1003 192.168.0.1 68 1003 192.168.0.2 71 1005 192.168.0.2 71 1005 192.168.0.2 74 1005 192.168.0.2 74 1005 192.168.0.2 75 1003 192.168.0.2 75 1003 192.168.0.2 75 1003 192.168.0.2 75 1003	VPN PREFIX FROM PEER ID LABEL STATUS 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R 192.168.0.1 62 1003 I,U,IA 192.168.0.1 64 1005 C,R 192.168.0.1 65 1003 I,U,IA 192.168.0.1 65 1003 I,U,IA 192.168.0.1 67 1005 C,R 192.168.0.2 71 1005 C,R 192.168.0.2 71 1005 C,R 192.168.0.2 74 1005 C,R 192.168.0.2 75 1003 U,IA 192.168.0.2 75 1003 U,IA 192.168.0.2 77 1005 Inv,U 192.168.0.2 77 1005 Inv,U 192.168.0.2 77 1005 Inv,U 192.168.0.2 77 1005 Inv,U 192.168.0.2 78 1003 U,IA	VPN PREFIX FROM PEER ID LABEL STATUS TYPE 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 192.168.0.1 62 1003 I,U,IA installed 192.168.0.1 64 1005 C,R installed 192.168.0.1 65 1003 I,U,IA installed 192.168.0.1 65 1003 I,U,IA installed 192.168.0.1 65 1003 I,U,IA installed 192.168.0.2 71 1005 Inv,U installed 192.168.0.2 71 1005 C,R installed 192.168.0.2 74 1005 C,R installed 192.168.0.2 75 1003 U,IA installed 192.168.0.2 77 1005 Inv,U installed 192.168.0.2 77 1005 Inv,U installed 192.168.0.2 78 1003 U,IA installed	PATH ATTRIBUTE VPN PREFIX FROM PEER ID LABEL STATUS TYPE TLOC IP 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.10.100 192.168.0.1 62 1003 I,U,IA installed 10.10.10.10.2 192.168.0.1 64 1005 C,R installed 10.10.10.10.0 192.168.0.1 65 1003 I,U,IA installed 10.10.10.10.0 192.168.0.1 65 1003 I,U,IA installed 10.10.10.2 192.168.0.1 67 1005 Inv,U installed 10.10.10.10.0 192.168.0.2 71 1005 C,R installed 10.10.10.10.0 192.168.0.2 72 1003 U,IA installed 10.10.10.10.0 192.168.0.2 74 1005 C,R installed 10.10.10.10.0 192.168.0.2 75 1003 U,IA installed 10.10.10.10.0 <	PATH ATTRIBUTE VPN PREFIX FROM PEER ID LABEL STATUS TYPE TLOC IP COLOR 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.10.0 blue 192.168.0.1 62 1003 I,U,IA installed 10.10.10.100 blue 192.168.0.1 64 1005 C,R installed 10.10.10.2 default 192.168.0.1 65 1003 I,U,IA installed 10.10.10.2 private1 192.168.0.1 65 1003 I,U,IA installed 10.10.10.2 private1 192.168.0.1 67 1005 Inv,U installed 10.10.10.0 blue 192.168.0.2 71 1005 C,R installed 10.10.10.2 private2 192.168.0.2 72 1003 U,IA installed 10.10.10.0 blue 192.168.0.2 74 1005 C,R installed 10.10.10.0	VPN PREFIX FROM PEER ID LABEL STATUS TYPE TLOC IP COLOR ENCAP 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.100 blue ipsec 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.100 blue ipsec 192.168.0.1 62 1003 I,U,IA installed 10.10.10.100 blue ipsec 192.168.0.1 64 1005 C,R installed 10.10.10.100 blue ipsec 192.168.0.1 65 1003 I,U,IA installed 10.10.10.100 blue ipsec 192.168.0.1 67 1005 Inv,U installed 10.10.10.100 blue ipsec 192.168.0.2 71 1005 C,R installed 10.10.10.100 blue ipsec 192.168.0.2 74 1005 C,R installed 10.10.10.100 blue<

Spoke 2#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE COLOR	TLOC REMOTE TLOC COLOR	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	I ENCAP MI	DETE ULTI
10.10.10.100	100	up	blue	blue	10.10.10.2	10.100.100.1	12366	ipsec	7

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

1 10.10.10.1

yes inactive

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要觸發按需隧道啟用,需要關注流量。在本示例中,使用ICMP流量,在傳送流量後,按需遠端系統的狀態從兩端的「非活動」狀態更改為「活動」狀態,並且OMP表中的目標字首從「中心」的C、I、R狀態更改為「分支2」的C、I、R狀態

<#root>

Spoke 1#ping vrf 10 10.2.2.2 re 20

Spoke 1#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

2 10.10.10.2

yes active

56

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	SOURCE TLOC STATE COLOR	REMOTE TLO COLOR	OC SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCAP	DETECT TX MULTIPLIER
10.10.10.100	100	up blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7
10.10.10.2	2	up default	default	10.10.10.1	10.12.12.2	12366	ipsec	7
10.10.10.2	2	up blue	blue	10.10.10.1	10.12.12.2	12366	ipsec	7

Generating output, this might take time, please wait ... Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated

			PATH		ATTRIBUTE			
TENANT	VPN PREFIX	FROM PEER	ID LAB	L STATUS	TYPE	TLOC IP	COLOR	ENCAP P
0	10 10.2.2.2/32	192.168.0.1	61 1005	5 R	installed	10.10.10.100	blue	ipsec
		192.168.0.1	62 1003	C,I,R	installed	10.10.10.2	default	ipsec
		192.168.0.1	64 1005	6 R	installed	10.10.10.100	blue	ipsec
		192.168.0.1	65 1003	C,I,R	installed	10.10.10.2	privatel	ipsec
		192.168.0.1	67 100	5 Inv,U	installed	10.10.10.100	blue	ipsec
		192.168.0.1	68 1003	C,I,R	installed	10.10.10.2	private2	ipsec
		192.168.0.2	71 100	R	installed	10.10.10.100	blue default	ipsec
		192.108.0.2	72 100.	R R	installed	10.10.10.2	hlue	insec
		192.168.0.2	75 1003	C.R	installed	10.10.10.2	private1	ipsec
		192.168.0.2	77 100	i Inv,U	installed	10.10.10.100	blue	ipsec
		192.168.0.2	78 1003	C,R	installed	10.10.10.2	private2	ipsec

Spoke 2#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

1 10.10.10.1

yes active

53

Spoke 2#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	COLOR	COLOR	SOURCE IP	IP	PORT	ENCAP MUI	LTIPLIE
10.10.10.100	100	up	blue	blue	10.10.10.2	10.100.100.1	12366	ipsec	7
10.10.10.1 10.10.10.1	2 2	up up	default blue	default blue	10.10.10.2 10.10.10.2	10.11.11.1 10.11.11.1	12366 12366	ipsec ipsec	7 7

 在網輻間停止流量和空閒超時到期後,網輻間的BFD會話消失,按需狀態返回非活動狀態,路 由從OMP表中的集線器返回到C、I、R備份路由狀態

<#root>

Spoke 1#show sdwan bfd sessions

			SOURCE TLOC	REMOTE TLC	C	DST PUBLIC	DST PUBL	IC	DETECT
SYSTEM IP	SITE ID	STATE	COLOR	COLOR	SOURCE IP	IP	PORT	ENCAP	MULTIP
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	7

Spoke 1#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

2 10.10.10.2

yes inactive

-

Spoke 2#show sdwan bfd sessions

			SOURCE TLOC R	EMOTE TL	0C	DST PUBLIC	DST PUB	LIC	DETEC
SYSTEM IP	SITE ID	STATE	COLOR	COLOR	SOURCE IP	IP	PORT	ENCAP	MULTI
10.10.10.100	100	up	blue	blue	10.10.10.2	10.100.100.1	12366	ipsec	7

Spoke 2#show sdwan system on-demand remote-system

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

1 10.10.10.1

_

yes inactive

常見問題場景

使用的拓撲



方案1:分支認為透過集線器的備份路徑無效且無法解析

症狀

 無法訪問Spoke 2中的目標字首,可以看到來自集線器的備份路徑,但會將其視為無效/已解除 安裝

<#root>

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated

						PAT	Ή			ATTRIE	BUTE					
TENANT	VPN	PREF	IX 	FROM	PEER	ID		LABEL	STATU	S TYPE		TLOC	C IP	COLOR	ENCA	P PREFERENC
0 1	LO	10.2	.2.2/32													
192.168	3.0.1	61	1005		Inv,U	insta	lled	10.10	.10.100	blue	ipse	с	-	None	9	None -
				192.	168.0.1	62	1003		U,IA	install	led 10	.10.	10.2	default	ipse	c –
192.1	L68.().1	64 100	5	Inv,	U ins	talle	d 10.1	L0.10.10	00 blue	ip	sec	-	N	one	None -
				192.	168.0.1	65	1003		U,IA	install	led 10	.10.	10.2	private	1ipse	c –
192.168	3.0.1	67	1005		Inv,U	insta	lled	10.10	.10.100	blue	ipse	с	-	None	9	None -
				192.	168.0.1	68	1003		U,IA	install	led 10	.10.	10.2	private	2ipse	c –
192.16	58.0.	.2 7	1 1005		Inv,U	inst	alled	10.10	0.10.100) blue	ips	ec	-	No	ne	None -
				192.	168.0.2	72	1003		U,IA	install	led 10	.10.	10.2	default	ipse	c –
192.168	3.0.2	2 74	1005		Inv,U	insta	lled	10.10	.10.100	blue	ipse	с	-	None	9	None -
				192.	168.0.2	75	1003		U,IA	install	led 10	.10.	10.2	private	1ipse	c –
192.16	58.0.	.2 7	7 1005		Inv,U	inst	alled	10.10	0.10.100) blue	ips	ec	-	No	ne	None -
				192.	168.0.2	78	1003		U,IA	install	led 10	.10.	10.2	private	2ipse	c –

疑難排解

1. 檢查是否已建立指向分支的集線器BFD會話

<#root>

SYSTEM IP	SITE ID	STATE	SOURCE TLOC	REMOTE TLOC COLOR.	SOURCE IP	DST PUBLIC IP	DST PUBLIC PORT	ENCA
10.10.10.2 10.10.10.1	2 1	 ир ир	blue default	blue default	10.10.10.100 10.10.10.100	10.12.12.2 10.11.11.1	12366 12366	ipse ipse

2. 檢查按需隧道策略,以確認所有站點都已根據其角色(中心或分支)包括在正確的站點清單中

3. 使用命令show sdwan system on-demand確認分支中是否啟用了按需功能並且處於活動狀態

```
<#root>
```

Spoke 1#show sdwan system on-demand

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-CFG(min)

1	10.10.10.1

yes active

10

Spoke 2#show sdwan system on-demand

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-CFG(min)

2	10.	10.	10.	2

yes active

10

4. 確認是否在中心站點中啟用流量工程服務(服務TE)。有用的命令可以是show sdwan run | 包括TE

<#root>

hub#show sdwan run | inc TE

解決方案

• 在這種情況下,中心站點中未啟用服務TE。若要修正,請在集線器端進行設定:

<#root>

hub#config-trans
hub(config)# sdwan

hub(config-vrf-global)# service TE vrf global

hub(config-vrf-global)# commit

檢查Spoke 1 OMP表中是否已更改,現在對於來自中心10.10.10.100的條目(生成利息流量之前),此路由為C、I、R,而對於來自Spoke 2 10.10.10.2的條目,此路由為C、I、R(生成利息流量時)。此外,使用命令show sdwan system on-demand remote-system <remote system ip>,檢查分支1和分支2之間的BFD會話,以及按需隧道是否已啟用(如果適用):

<#root>

Before interest traffic

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32

Generating output	, this might take	time, please wait				
Code:						
C -> chosen						
I -> installed						
Red -> redistribu	ted					
Rej -> rejected						
L -> looped						
R -> resolved						
S -> stale						
Ext -> extranet						
Inv -> invalid						
Stg -> staged						
IA -> On-demand i	nactive					
U -> TLOC unresol	ved					
BR-R -> border-ro	uter reoriginated					
TGW-R -> transpor	t-gateway reorigin	nated				
AFFINITY						
		PATH	ATTRIBUT	E GROUP		
TENANT VPN PREF	IX FROM PEER	ID LABEL STATUS	TYPE	TLOC IP	COLOR	ENCAP PREFERE

192.168.0.1	62	1003	I,U,IA	installed	10.10.10.2	default	ipsec	_
192.168.0.1	64	1005	C,R	installed	10.10.10.100	blue	ipsec	_
192.168.0.1	65	1003	I,U,IA	installed	10.10.10.2	private1	ipsec	-
192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
192.168.0.1	68	1003	I,U,IA	installed	10.10.10.2	private2	ipsec	-
192.168.0.2	71	1005	C,R	installed	10.10.10.100	blue	ipsec	-
192.168.0.2	72	1003	U,IA	installed	10.10.10.2	default	ipsec	-
192.168.0.2	74	1005	C,R	installed	10.10.10.100	blue	ipsec	-
192.168.0.2	75	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
192.168.0.2	78	1003	U,IA	installed	10.10.10.2	private2	ipsec	-

While interest traffic

Spoke 1#

show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ... Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated

TENANT	VPN	PREI	TX	F	ROM	PEER	PATH ID LABEL	. STATUS	ATTRIBUTE TYPE	TLOC	IP	COLOR	ENCAP	PREFERENCI	AFFINI GROUP E NUMBER	TY R REGI
0	10 1	10.2	.2.2/3	32 19	2.16	8.0.1	61 1005	R	installed	10.10).10	.100	blue		ipsec -	None
192.168	3.0.1	L 62	1003	C,I,	R	insta	lled 10.	10.10.2	default	-	ij	psec -	None	None -		
				19	2.16	8.0.1	64 1005	R	installed	10.10	0.10	.100	blue		ipsec -	None
192.168	3.0.1	L 65	1003	C,I,	R	insta	lled 10.	10.10.2	private	e 1	ij	psec -	None	None -		
				19	2.16	8.0.1	67 1005	Inv,U	installed	10.10	0.10	.100	blue		ipsec -	None
192.168	3.0.1	L 68	1003	C,I,	R	insta	lled 10.	10.10.2	private	e2	ij	psec -	None	None -		
				19 19	2.16	58.0.2 58.0.2	71 1005 72 1003	R C,R	installed installed	10.10 10.10).10).10	.100 .2	blue defau	It ·	ipsec - ipsec -	None None

192.168.0.2 74 1005	R	installed	10.10.10.100	blue	ipsec - None
192.168.0.2 75 1003	C,R	installed	10.10.10.2	private1	ipsec - None
192.168.0.2 77 1005	Inv,U	installed	10.10.10.100	blue	ipsec - None
192.168.0.2 78 1003	C,R	installed	10.10.10.2	private2	ipsec - None

Spoke 1#show sdwan bfd sessions

			SOURCE TLOC	REMOTE T	LOC	DST PUBLIC	DST PUBL	IC
SYSTEM IP	SITE ID	STATE	COLOR	COLOR	SOURCE IP	IP	PORT	ENCAP
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

2 10.10.10.2 yes active 41 ----->on-demand tunnel established to spoke 2 10.10.10.2 due of

方案2:分支之間的BFD會話保持開啟

症狀

 在這種情況下,使用命令show sdwan system on-demand remote-system將遠端Spoke 2終端 列於按需遠端終端中,且其狀態為「no on-demand」,即使不傳送任何興趣資料流,並且直 接從Spoke 2獲取目標字首,Spoke 1和Spoke 2之間的BFD會話也會保持打開狀態

<#root>

Spoke 1#show sdwan system on-demand remote-system

SITE-ID

SYSTEM-IP ON-DEMAND

STATUS IDLE-TIMEOUT-EXPIRY(sec)

2

10.10.10.2 no

- -

Spoke 1#show sdwan bfd sessions

SYSTEM IP	SITE ID	STATE	SOURCE TLOC COLOR	REMOTE TI COLOR	LOC SOURCE IP	DST PUBLIC IP	DST PUBL PORT	LIC ENCAP	DETECT	'TX 'LIER I
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100	.1 12366	ipsec	7	
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec	7	-
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec	7	:
Spoke 1#show	sdwan om	p rout	te vpn 10 10.	.2.2.2/32						
Generating of Code: C -> chosen I -> installe Red -> redist Rej -> reject L -> looped R -> resolved S -> stale Ext -> extrat Inv -> inval Stg -> staged IA -> On-dema U -> TLOC un BR-R -> bord TGW-R -> trat	utput, th ed tributed ted d net id and inact resolved er-router nsport-ga	tive reor teway	ght take tim iginated reoriginated	e, please d	wait					
TENANT VPN P	REFIX		P/ FROM PEER II	ATH D LABEL ST	ATTRI FATUS TYPE	BUTE TLOC I	P COLO	DR E	NCAP PR	EFEREN
0 10 10	.2.2.2/32	2	192.168.0.1	73 1005 R	insta	lled 10.10.	10.100 blu	ie i	psec -	
192.168.0.1	74 1003 C	2,I,R	installed	10.10.10.	2 default	ipsec -	N	one	None	-
		:	192.168.0.1	76 1005 R	insta	lled 10.10.	10.100 blı	ie i	psec -	
192.168.0.1	77 1003	C,I,R	installed	10.10.1 0).2 private	el ipsec -	-	None	None	-
			192.168.0.1	79 1005 Ir	ıv,U insta	lled 10.10.	10.100 blu	ie i	psec -	
192.168.0.1	80 1003 C	.,I,R	installed	10.10.10.	2 private	2 ipsec -	N	one	None	-
			192.168.0.2 192.168.0.2 192.168.0.2 192.168.0.2 192.168.0.2	89 1005 R 90 1003 C 92 1005 R 93 1003 C	insta ,R insta insta ,R insta	lled 10.10. lled 10.10. lled 10.10. lled 10.10.	10.100 blu 10.2 det 10.100 blu 10.2 pr 10.100 blu	ue i Fault i ue i ivate1 i	psec – psec – psec – psec –	

1. 檢查按需隧道策略,以確認所有站點都已根據其角色(中心或分支)包括在正確的站點清單中

```
viptela-policy:policy
 control-policy ondemand
    sequence 1
     match route
      site-list Spokes
      prefix-list _AnyIpv4PrefixList
     L
     action accept
     set
       tloc-action backup
       tloc-list hub
      !
     !
    Т
 default-action accept
 Т
 lists
 site-list Spokes
  site-id 1-2
  I
  tloc-list hub
   tloc 10.10.10.100 color blue encap ipsec
   tloc 10.10.10.100 color default encap ipsec
   tloc 10.10.10.100 color private1 encap ipsec
  tloc 10.10.10.100 color private2 encap ipsec
  !
 prefix-list _AnyIpv4PrefixList
   ip-prefix 0.0.0.0/0 le 32
  !
 1
I
apply-policy
site-list Spokes
 control-policy ondemand out
 !
1
```

 使用show sdwan run命令檢查按需是否啟用 | inc在分支中按需提供和TE在集線器中透過命令 show sdwan run啟用 | 包括TE

<#root>

Spoke 1#show sdwan run | inc on-demand on-demand enable on-demand idle-timeout 10 Spoke 2#show sdwan run | inc on-demand Spoke 2#

Hub#show sdwan run | inc TE service TE vrf global

解決方案

• 在這種情況下,在Spoke 2中未啟用隨選功能。若要修正,請在Spoke 2端進行設定

<#root>

```
Spoke 2#config-trans
Spoke 2(config)# system
Spoke 2(config-vrf-global)# on-demand enable
Spoke 2(config-vrf-global)# on-demand idle-timeout 10
```

```
Spoke 2(config-vrf-global)# commit
```

 檢查Spoke 1 now Spoke 2中是否顯示為on-demand yes,並且OMP表已更改,並且現在對於 來自中心10.10.10.100(生成興趣流量之前)而不是直接來自Spoke 2的條目,此路由為C、 I、R

<#root>

```
Spoke 1#show sdwan system on-demand remote-system
SITE-ID SYSTEM-IP ON-DEMAND STATUS IDLE-TIMEOUT-EXPIRY(sec)
_____
      10.10.10.2 yes inactive -
2
Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32
Generating output, this might take time, please wait ...
Code:
C -> chosen
I -> installed
Red -> redistributed
Rej -> rejected
L -> looped
R -> resolved
S -> stale
Ext -> extranet
Inv -> invalid
Stg -> staged
IA -> On-demand inactive
U -> TLOC unresolved
BR-R -> border-router reoriginated
```

TGW-R -> transport-gateway reoriginated

AFFINITY

PATH ATTRIBUTE GROUP

TENANT	VPN	PREFIX	FROM PEER	ID	LABEL	STATUS	5 TYPE	TLOC IP	COLOR	ENCAP	PREFERENCE
0	10	10.2.2.2/32	192.168.0.1	61	1005	C,I,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	62	1003	I,U,IA	installed	10.10.10.2	default	ipsec	_
			192.168.0.1	64	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	65	1003	I,U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.1	68	1003	I,U,IA	installed	10.10.10.2	private2	ipsec	-
			192.168.0.2	71	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	72	1003	U,IA	installed	10.10.10.2	default	ipsec	-
			192.168.0.2	74	1005	C,R	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	75	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
			192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
			192.168.0.2	78	1003	U,IA	installed	10.10.10.2	private2	ipsec	-

 生成利息流量時,來自Spoke 2 10.10.10.2條目的流量將獲得C、I、R。此外,使用命令show sdwan system on-demand remote-system <remote system ip>,檢查Spoke 1和Spoke 2之間 的BFD會話是否已啟用,並檢查按需隧道是否已啟用

<#root>

Spoke 1#

show sdwan omp routes vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ... Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated

TENANT	VPN	PREFIX	FROM PEER	PATH ID LABEL STATUS	ATTRIBUTI TYPE	E TLOC IP	COLOR ENC	AP PRE
0	10	10.2.2.2/32	192.168.0.1	61 1005 R	installed	10.10.10.100	blue	ipsec
			192.168.0.1	62 1003 C,I,R	installed	10.10.10.2	default	ipsec

192.168.0.1	64	1005	R	installed	10.10.10.100	blue	ipsec
192.168.0.1	65	1003	C,I,R	installed	10.10.10.2	privatel	ipsec
192.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec
192.168.0.1	68	1003	C,I,R	installed	10.10.10.2	private2	ipsec
192.168.0.2	71	1005	R	installed	10.10.10.100	blue	ipsec
192.168.0.2	72	1003	C,R	installed	10.10.10.2	default	ipsec
192.168.0.2	74	1005	R	installed	10.10.10.100	blue	ipsec
192.168.0.2	75	1003	C,R	installed	10.10.10.2	private1	ipsec
192.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec
192.168.0.2	78	1003	C,R	installed	10.10.10.2	private2	ipsec

Spoke 1#show sdwan bfd sessions

SYSTEM IP SI	TE ID	STATE	SOURCE COLOR	TLOC F	REMOTE COLOR	TL0C	SOURCE	IP	DST PUBLIC IP	DST PUB PORT	LIC	DETECT P MULTIPL	IER I
10.10.10.100	100	up blu	ie	b	lue		10.10.1	0.1	10.100.100.	1 12366	ipsec	7	
10.10.10.2	2	up def	ault	de	efault		10.10.1	0.1	10.12.12.2	12366	ipsec	7	1
10.10.10.2	2	up blu	e	bl	lue		10.10.1	0.1	10.12.12.2	12366	ipsec	7	1

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

```
IDLE-TIMEOUT-EXPIRY(sec)
```

2 10.10.10.2 yes active 41 ----->on-demand tunnel established to Spoke 2 10.10.10.2 due of

方案3:網輻中沒有租用或安裝任何備用路由

症狀

• 在這種情況下,在OMP表中沒有源自Spoke 2的字首10.2.2.2/32的備份路由,只看到按需非活 動條目。已確認分支中的按需配置和集線器中的TE

<#root>

Spoke 1#show sdwan omp route vpn 10 10.2.2.2/32

Generating output, this might take time, please wait ... Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated AFFINITY PATH ATTRIBUTE GROUP FROM PEER ID LABEL STATUS TYPE TLOC IP COLOR ENCAP PREFERENCE NUMB TENANT VPN PREFIX _____ 10.2.2.2/32 192.168.0.1 108 1003 0 10 U,IA installed 10.10.10.2 default ipsec -None None -192.168.0.1 113 1003 U,IA installed 10.10.10.2 private1 ipsec -None None -192.168.0.1 141 1003 U,IA installed 10.10.10.2 private2 ipsec -None None -192.168.0.2 112 1003 U,IA installed 10.10.10.2 default ipsec -None None -192.168.0.2 117 1003 U,IA installed 10.10.10.2 private1 ipsec -None None -192.168.0.2 144 1003 U,IA installed 10.10.10.2 private2 ipsec -None None -Spoke 1#show sdwan run | inc on-demand on-demand enable on-demand idle-timeout 10 Spoke 2#show sdwan run | inc on-demand on-demand enable on-demand idle-timeout 10

Hub#show sdwan run | inc TE service TE vrf global

疑難排解

• 檢查按需集中策略,並確認所有分支是否都包含在正確的站點清單中

```
<#root>
viptela-policy:policy
control-policy ondemand
   sequence 1
    match route
     site-list Spokes
     prefix-list _AnyIpv4PrefixList
     !
     action accept
     set
      tloc-action backup
      tloc-list hub
     !
     Ţ
    L
 default-action accept
 !
 lists
site-list Spokes
  site-id 1
  !
 tloc-list hub
  tloc 10.10.10.100 color blue encap ipsec
  tloc 10.10.10.100 color default encap ipsec
  tloc 10.10.10.100 color private1 encap ipsec
  tloc 10.10.10.100 color private2 encap ipsec
  !
 prefix-list _AnyIpv4PrefixList
  ip-prefix 0.0.0.0/0 le 32
  !
 !
!
apply-policy
site-list Spokes
 control-policy ondemand out
 !
```

解決方案

 請注意,策略中的站點清單分支中缺少Spoke 2站點ID 2。將其包含在站點清單中後,備份路 徑將正確安裝,當傳送關注流量時,會啟動按需隧道和分支之間的BFD會話。

```
<#root>
```

Spokes site list from policy before

lists

site-list Spokes

site-id 1

!

```
Spokes site list from policy after
```

lists

```
site-list Spokes
```

site-id 1-2

!

Spoke 1#show sdwan omp routes vpn 10 10.2.2.2/32 Generating output, this might take time, please wait ... Code: C -> chosen I -> installed Red -> redistributed Rej -> rejected L -> looped R -> resolved S -> stale Ext -> extranet Inv -> invalid Stg -> staged IA -> On-demand inactive U -> TLOC unresolved BR-R -> border-router reoriginated TGW-R -> transport-gateway reoriginated AFFINITY PATH ATTRIBUTE GROUP TENANT VPN PREFIX FROM PEER ID LABEL STATUS TYPE TLOC IP COLOR ENCAP PREFERENC _____ 10 10.2.2.2/32 192.168.0.1 61 1005 C,I,R installed 10.10.10.100 blue 0 ipsec 192.168.0.1 62 1003 I,U,IA installed 10.10.10.2 default ipsec _ 192.168.0.1 64 1005 C,R installed 10.10.10.100 blue ipsec _ 192.168.0.1 65 1003 I,U,IA installed 10.10.10.2 private1 ipsec _

192	.168.0.1	67	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
192	.168.0.1	68	1003	I,U,IA	installed	10.10.10.2	private2	ipsec	-
192	.168.0.2	71	1005	C,R	installed	10.10.10.100	blue	ipsec	-
192	.168.0.2	72	1003	U,IA	installed	10.10.10.2	default	ipsec	-
192	.168.0.2	74	1005	C,R	installed	10.10.10.100	blue	ipsec	-
192	.168.0.2	75	1003	U,IA	installed	10.10.10.2	private1	ipsec	-
192	.168.0.2	77	1005	Inv,U	installed	10.10.10.100	blue	ipsec	-
192	.168.0.2	78	1003	U,IA	installed	10.10.10.2	private2	ipsec	-

Spoke 1#show sdwan bfd sessions

SOURCE SYSTEM IP	SITE ID	STATE	TLOC REMOTE COLOR	TLOC DST COLOR	PUBLIC SOURCE IP	DST PUBLIC IP	PORT	ENCAP	DETECT MULTIPLIER	TX INTERVAL(
10.10.10.100	100	up	blue	blue	10.10.10.1	10.100.100.1	12366	ipsec	: 7	1000
10.10.10.2	2	up	default	default	10.10.10.1	10.12.12.2	12366	ipsec	7	1000
10.10.10.2	2	up	blue	blue	10.10.10.1	10.12.12.2	12366	ipsec	7	1000

Spoke 1#show sdwan system on-demand remote-system system-ip 10.10.10.2

SITE-ID SYSTEM-IP

ON-DEMAND STATUS

IDLE-TIMEOUT-EXPIRY(sec)

2 10.10.10.2 yes active 56 ----->on-demand tunnel established to Spoke 2 10.10.10.2 due of

有用的命令

- · show sdwan system on-demand
- · show sdwan system on-demand remote-system
- show sdwan system on-demand remote-system system-ip <system ip>
- show sdwan run | 包括按需提供
- show sdwan run | 包括TE
- show sdwan ompo routes vpn <vpn number>

關於此翻譯

思科已使用電腦和人工技術翻譯本文件,讓全世界的使用者能夠以自己的語言理解支援內容。請注 意,即使是最佳機器翻譯,也不如專業譯者翻譯的內容準確。Cisco Systems, Inc. 對這些翻譯的準 確度概不負責,並建議一律查看原始英文文件(提供連結)。